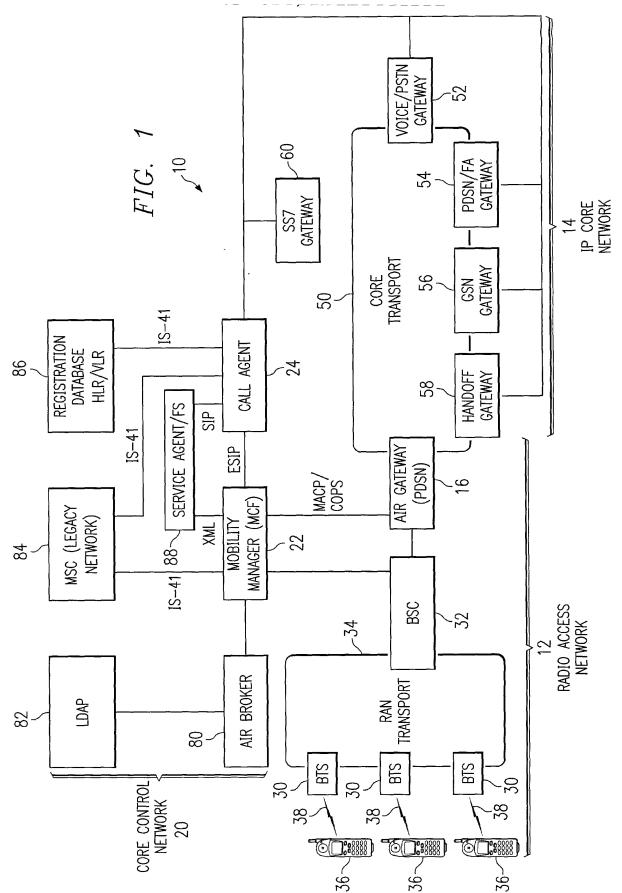
Inventors: Dantu, et al.

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Inventors: Dantu, et al. Attorney's Docket No.: 062891.0570 Filed: July 18, 2001 Sheet 2 of 16 FIG. 2 FIG. **START START** RECEIVE REGISTRATION GENERATE SIGNALING MESSAGE 120 -100 ~ REQUEST FOR MOBILE FOR WIRELESS EVENT 122 102 -FORWARD SIGNALING REGISTER MOBILE MESSAGE TO MCF 124 UNREGISTER CONVERT SIGNALING REGISTERED? MESSAGE TO ESIP MESSAGE 104 FOR WIRELESS EVENT TIME CANCELLATION **EXPIRING** FORWARD ESIP MESSAGE TO 106 CALL AGENT FOR HANDLING LOCATION YES **UPDATE? END** 128 NO UNREGISTER MOBILE 126-**START END** 300-CALL SET UP RETRIEVE CALL TRIGGERS 302-FROM FEATURE SERVER DOWNLOAD WIRELESS 304 SPECIFIC TRIGGERS TO MCF DOWNLOAD SELECTED WIRELESS FIG. 10 306 SPECIFIC TRIGGERS TO GATEWAY MONITOR CALL WIRELESS EVENT 308 310 FOR EVENTS CALL NOTIFY CALL AGENT TERMINATION **END** PROCESS EVENT 312

Method and System tor Providing Wireless-Specific Services for a Wireless

Network

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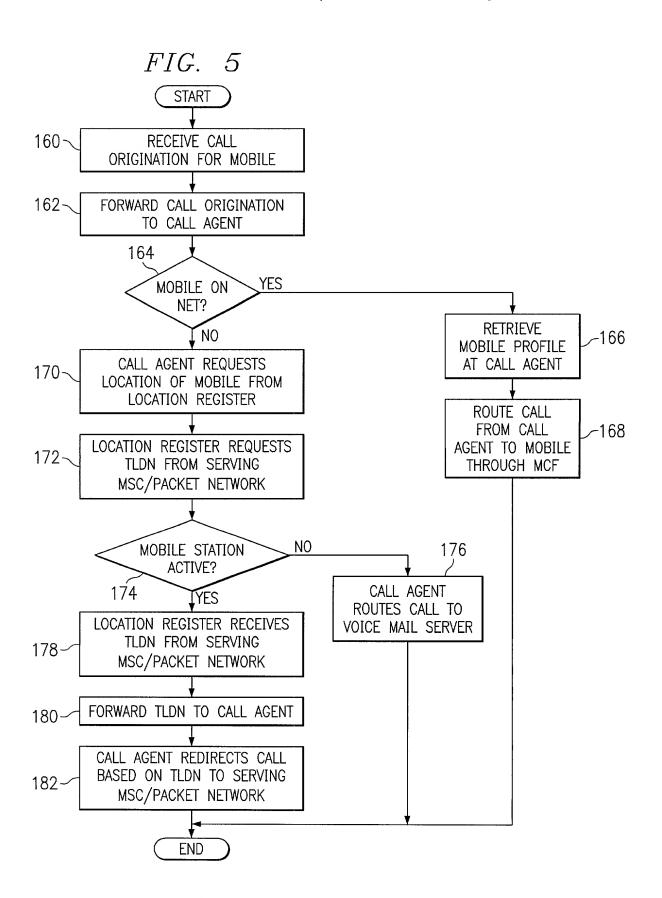
FIG. ${\cal A}$ SIP MESSAGES FOR BASIC SERVICES AND MOBILITY MANAGEMENT

THE STATE OF THE STATE STATES AND MOBILITY MANAGEMEN	MCF/CASIPSIP HEADERS/EVT (OPN)SIP EXTENSIONINTERFACEREQ/RESPPARAMETERSNOTES	NONE ESN, CELLID	IS-634 REGISTER FROM:MIN NONE ESN REGCANC SENT		IS-634 REGISTER FROM:MIN LOCATIONUPDATINGREQ ESN, CELLID SUBSEQUENT	IS-41 REGISTER TO:MIN NONE ESN RECEIVED BY CA WHEN MS MOVES TO ANOTHER SERVING MSC
SCHOLD I ON DASIN			ļ			
	1,1					
	MCF/CA INTERFACE EVENT	40 MOBILE REGISTRATION (LOCATIONUPDATEREQ)	- MOBILE UNREGISTERS	LOCATIONUPDATEREO	(LUR)	REGISTRATION CANCELLATION FROM HLR/VLR
		140~	142		44	46

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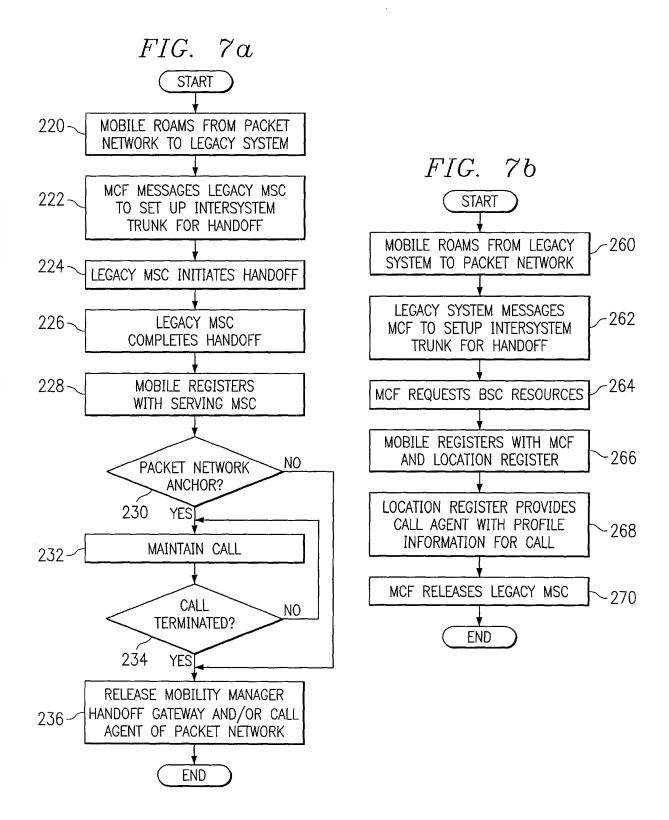
FIG. 6

				<u> </u>
	NOTES	CA RECEIVES ROUTEREQ FROM HLR AND NEEDS TO ASSIGN A TLDN FOR AN ONNET MS	MCF ASSIGNS THE TLDN AND NOTIFIES THE CA WITH THE MIN TO TLDN ASSOCIATION	TLDN TIMER EXPIRED. TLDN IS RELEASED AND MIN NO LONGER ASSOCIATED TO TLDN. THE TLDN IS ALSO RELEASED WHEN THE CALL ARRIVES AT CA/MCF
ANDLING	SIP EXTENSION PARAMETERS	NONE	TLDN	NGJT
R BASIC CALL H	EVT (OPN)	ASSIGNTLDN	ASSIGNTLDN	DEASSIGNTLDN
SIP MESSAGES FOR BASIC CALL HANDLING	SIP HEADERS/ PARAMETERS	TO:MIN	FROM:MIN	FROM:MIN
	SIP REQ/RESP	INFO	200 OK	INFO
	MCF/CA INTERFACE	IS-41		INTERNAL
	MCF/CA MCF/CA INTERFACE	ROUTEREQ FROM HLR	RESPONSE TO SIP INFORMATION	TLDN TIMER EXPIRY
		200	202	204

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SIP MESSAGES FOR PACKET NETWORK TO LEGACY SYSTEM HANDOFF

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NOTES	MCF SENDS A FACILITIES DIRECTIVE2 REQUEST OVER IS—41 I/F WITH TARGET CELLID, MIN, ESN NUMBER AND HANDOFF CKT ID TO SETUP INTERSYSTEM TRUNK FOR HANDOFF TO LEGACY NETWORK AND START INTER—SYSTEM HANDOFF	DIRECTIVEZ REQUEST OVER IS—41 I/F WITH TARGET CELLID, MIN, ESN NUMBER AND HANDOFF CKT ID TO SETUP INTERSYSTEM TRUNK FOR HANDOFF TO LEGACY NETWORK AND START INTER—SYSTEM HANDOFF RESPONSE FROM TARGET MSC AFTER IT INITIATES HANDOFF SENT BY TARGET (LEGACY) MSC AFTER COMPLETION OF HANDOFF TO LEGACY NETWORK AFTER COMPLETION OF HANDOFF TO LEGACY NETWORK AFTER COMPLETION OF TO LEGACY NETWORK THE MS GETS REGISTERED AT ANOTHER SERVING MS		AFTER COMPLETION OF HAND OFF TO LEGACY NETWORK THE MS GETS REGISTERED AT ANOTHER SERVING MSC. NOTE CALL STILL REMAINS ACTIVE	IF THE MCF WAS THE ANCHOR MSC, FACILITIESRELEASE IS RECEIVED FROM THE SERVING MSC. THE HANDOFF CIRCUIT ON THE HANDOFF GATEWAY IS ALSO RELEASED AND CA IS NOTIFIED TO RELEASE THE CALL
SIP EXTENSION	NONE	NONE	NONE	NONE	NONE
EVT (OPN)	NONE	NONE	NONE	NONE	NONE
SIP HEADERS/	NONE	NONE	NONE	TO:MIN EXPIRE:0	FROM:MIN
SIP RFO/RFSP	NONE	NONE	NONE	REGISTER	BYE
MCF/CA INTERFACE		IS-41	IS-41	IS-41	IS-41
MCF/CA INTERFACE EVENT	HANDOFF REQUIRED FROM MS FOR HANDOFF TO LEGACY NETWORK	FACILITIESDIRECTIVE2 - RESPONSE FROM TARGET MSC	MOBILEONCHANNEL RECEIVED BY MCF	REGCAN FROM HLR RECEIVED BY CA	FACILITIESRELEASE RECEIVED BY MCF
	280 >	282	284~	786	288

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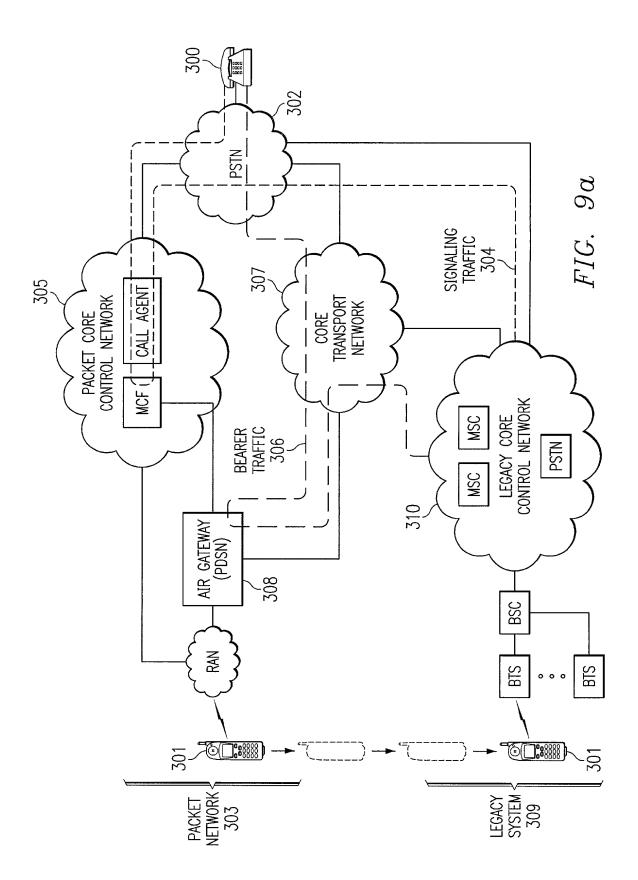
HANDOFF
NETWORK
PACKET
TEM TO
4CY SYS
FOR LEG
MESSAGES F
SIP

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	NOTES	SERVING LEGACY MSC SENDS A REQUEST (WITH ESN, TARGETCELLID, HANDOFF CKT ID ETC) OVER IS—41 I/F TO MCF TO SETUP THE TARGET BSC. MCF SENDS HANDOFF REQUEST TO TARGET BSC TO ALLOCATE RESOURCES	WHEN A MS MOVES INTO THE PACKET NETWORK AREA, THE MS NEEDS TO BE REGISTERED IN THE MCF. MCF ALSO REGISTERS THE MS WITH THE HLR USING REGISTRATION NOTIFICATION REQUEST	AFTER COMPLETION OF HANDOFF TO PACKET NETWORK, I.E WHEN MS CAN SUCCESSFULLY BE ACCESSED BY BSC IN THE PACKET NETWORK, MCF WILL SEND MOBILEONCHANNEL TO THE CURRENT SERVING MSC. MCF THEN SENDS MOBILEONCHANNEL TO THE SERVING MSC. MCF ALSO SENDS REGISTER THIS MS WITH HLR. WHEN REGISTER THIS MS WITH HLR. WHEN REGISTER JUS NOTIFIED VIA SIP REGISTER MESSAGE WITH PROFILE INFORMATION
NOINEL INCLINIONAL	SIP EXTENSION PARAMETERS	NONE	ESN, CELLID INFORMATION	NONE
ILIVI IO	EVT (OPN)	NONE	NONE	NONE
MICHARDE I ON CEURO! SISIEM IO I NONE! NETMONN INNIBO!!	SIP HEADERS/ PARAMETERS	NONE	TO:MIN	NONE
	SIP REQ/RESP	NONE	REGISTER	NONE
0.11	MCF/CA INTERFACE	IS-41	IS-41	IS-634
	MCF/CA INTERFACE EVENT	FACILITIESDIRECTIVE2 - REQUEST FROM LEGACY MSC	FACILITIESDIRECTIVE2 - RESPONSE TO LEGACY MSC	HANDOFF
		790	797	294

Network

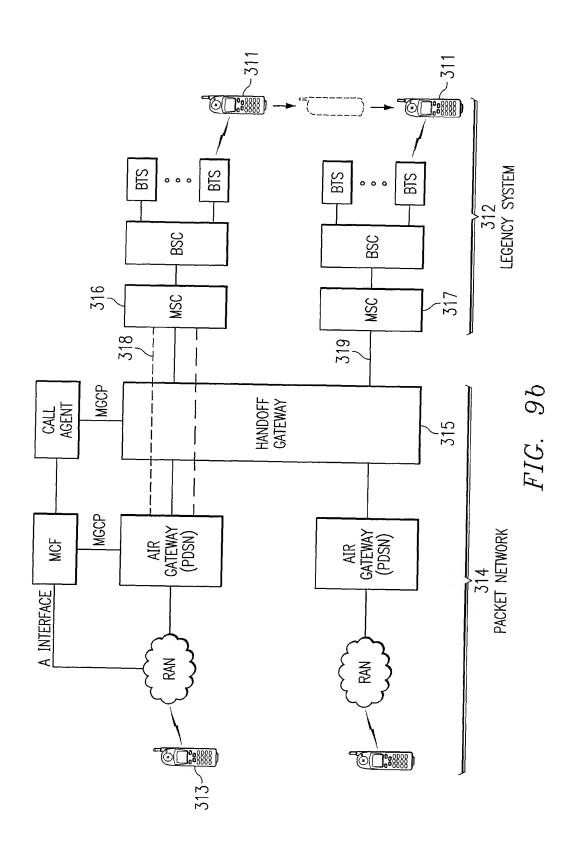
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FIG. 11 lpha SIP MESSAGES FOR FEATURE ACTIVATION/DE-ACTIVATION

			OIL INLUCT		, 11.V	OIL INLOCABLO I ON I ENIONE ANTIVATION, DE MOTAMINA	
	MCF/CA MCF/CA	MCF/CA	SIP	SIP HEADERS/ EVT	EM	SIP EXTENSION	SJLON
	INTERFACE EVENT	INTERFACE	REQ/RESP	PARAMETERS	(OPN)	PARAMETERS	
320~	CM SERVICE REQUEST	IS-634	INVITE	TO:FEATURE CODE FROM:MIN	NONE	NONE	CA NOTIFIES HLR VIA FEATREQ MSG
322	FEATUREREQ RESPONSE FROM HLR	IS-41	200 OK 4xx	NIW:OL	NONE	TREATMENT CODE: CONFIRMATIONTONE OR ANNOUNCEMENT	MCF APPLIES THE TREATMENT BASED ON TREATMENT CODE AND RELEASES THE CALL. MCF WILL REQUEST IAG TO APPLY CONFIRMATION TONE BASED ON THE SIP RESPONSE

 $FIG. \ 11b$ SIP MESSAGES FOR ABBREVIATED DIALING

	MCF/CA INTERFACE EVENT	MCF/CA INTERFACE	SIP REQ/RESP	SIP HEADERS/ PARAMETERS	EVT (OPN)	SIP EXTENSION PARAMETERS	NOTES
324	CM SERVICE REQUEST	IS-634	INVITE	TO:DIALED DIGITS FROM:MIN	NONE	NONE	

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		-	
ESTRICTION (CNIP/CNIR)	NOTES	CALL AGENT FORMATS THE CALLING NUMBER IN ISUP IAM MSG FROM CALLS TO PSTN ON LEGACY MSC USING FROM DATA AND USER PROFILES BASED ON CNIR FEATURE OF THE MS'S PROFILE	CALL AGENT WILL INCLUDE THE FROM FIELD DATA IF THERE IS NO RESTRICTION ON PRESENTATION. ALTERNATIVELY A STRING OF UNKNOWN OR ANONYMOUS
N PRESENTATION	EVT SIP EXTENSION (OPN) PARAMETERS	NONE	NONE
ICATION	(OPN)	NONE	NONE
SIP MESSAGES FOR CALLING NUMBER IDENTIFICATION PRESENTATION/RESTRICTION (CNIP/CNIR)	SIP HEADERS/ PARAMETERS	TO:CALLEDNUMBER FROM:MIN	TO:MIN FROM:
	SIP REQ/RESP	INVITE	INVITE
	MCF/CA INTERFACE	IS-634	PSTN/MSC I/F
	MCF/CA MCF/CA INTERFACE F		- ISUP IAM
		326~	328

	NOTES	MCF APPLIES THE A SINGLE ABBREVIATED ALERT TONE TO MS VIA PDSN BASED ON ALERT CODE	RESPONSE SENT TO CA	
TIONAL (CFU)	EVT (OPN) SIP EXTENSION PARAMETERS	TREATMENT CODE	NONE	
ING UNCONDI	EVT (OPN)	CFU	NONE	
MESSAGES FOR CALL FORWARDING UNCONDITIONAL (CFU)	SIP HEADERS/ PARAMETERS	TO:MIN	FROM:MIN	
SIP MESSAGES F	SIP REQ/RESP	INFO	1xx 200 0K	
	MCF/CA INTERFACE	IS-41	IS-634	
	MCF/CA INTERFACE EVENT	INFODIR FROM HLR TO CA	FLASH WITH INFO ACK FROM MS	
	•	330	332	

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SIP MESSAGES FOR CALL FORWARDING NO ANSWER (CFNA)

	NOTES -	3		
		PAKAMETERS		NONE
, LUI	(EVI	(UPIN)		NONE
CID HEADERD /	DADAMETERS/	I MINAIMETERS	TO:CLDNO.	FROM:MIN
SIP	REO/RESP		408 REQUEST	TIMEOUT
MCF/CA	INTERFACE		1S-634	
MCF/CA	INTERFACE EVENT	DACE OF ANICHER	THE OR ANSWER	IMECUI
			121	

		NOIES	SECOND CALL REQUEST TO MS. MCF SENDS FLASHWITHINFORMATION		IF MS ACCEPTS SECOND	CALL THE FIRST TIME	MS DOES NOT	ACCELI SECUND CALL	SUBSEQUENTLY WHEN MS	SMITCHES TO OTHER CALL LEG
ATTING	SIP HEADERS/ EVT SIP EXTENSION PARAMETERS (OPN) PARAMETERS		NONE		NONE		NONE		NONE	
CALL W	EVI	(OPN)	NONE		NONE		NONE		FLASH	
SIP MESSAGES FOR CALL WAITING	SIP HEADERS/	PARAMETERS	TO:MIN FROM:CLGNO		IO:CLGNNO FROM:MIN		AS ABOVE		O:CLGNNO FROM:MIN	
SIP	SIP	REU/ RESP	INVITE		200	406 NOT	ACCEPTED		INFO	
	MCF/CA				IS-634				IS-634	
	MCF/CA INTERFACE EVENT			FLASHWITHINFORMATION	338 (INITIAL RESPONSE)	OP TIMEOUT	ON LIMITOOL	FLASHWITHINFORMATION	(SUBSEQUENTLY)	
			336~		338~				340	

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FIG.~~11g SIP MFSSAGES FOR VOICE MAIL WAITING NOTIFICATION

SIP MESSAGES FOR VOICE MAIL WAITING NOTIFICATION	NOTES	HLR NOTIFIES CA VIA QUALIFICATIONDIRECTIVE WITH MSGWAITNOTIFICATIONCOUNT AND MSGWAITNOTIFICATIONTYPE. CA WILL FORWARD THE NOTIFICATION USING INFO MSG WITH MSG WAITING INDICATION PARAMETER TO MCF. IF MS IS REGISTERED OTHERWISE WAITS FOR THE MS TO REGISTER	MCF RESPONSE TO CA FOR MSGWAITINGNOTIFICATION AND CA RESPONDS TO HLR
	SIP EXTENSION PARAMETERS	MSGWAITNOTIFICATIONCOUNT MSGWAITNOTIFICATIONTYPE	NONE
	(OPN)	NOTIFY	NONE
	SIP HEADERS/ PARAMETERS	TO:MIN	FROM:MIN
	SIP REQ/RESP	INFO	200 OK 4xx
	MCF/CA INTERFACE	IS-41	IS-41
	MCF/CA MCF/CA SIP INTERFACE REQ/RESP	342 REQUEST FROM HLR	QUALDIR RESP TO 344 HLR FROM CA
		342	344~

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SIP MESSAGES FOR VOICE MESSAGE

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SIP MESSAGES FOR VOICE MESSAGE RETRIEVAL	NOTES	CA DETECTS REVERTIVE CALL WHEN MS DIALS IT'S OWN NUMBER. CA SENDS LOCREQ TO HLR IF VOICE MESSAGE SERVER IS NOT CONFIGURED ON THE CA	LOCATION REQUEST RESPONSE CONTAINS THE TERMLIST PARAMETERS WHICH WILL CONTAIN THE DESTINATION DIGITS OF THE VOICE MAIL SERVER. CA PERFORMS ROUTING TO THE VOICE MAIL SERVER AND SETS UP THE CONNECTION TO VOICE MAIL SERVER. MCF HANDLES THE RESPONSE FROM CA AND SETS UP THE BEARER PATH
	SIP HEADERS/ EVT SIP EXTENSION PARAMETERS (OPN) PARAMETERS	NONE	NONE
	(OPN)	NONE	NONE
	SIP HEADERS/ PARAMETERS	TO:MIN FROM:MIN	TO:MIN
	SIP REQ/RESP	INVITE	1xx 200 0K
	MCF/CA INTERFACE	IS-634	IS-41
	MCF/CA INTERFACE EVENT	346 CM_SERVICE_REQUEST FROM MS	LOCATIONREQUEST RESPONSE FROM HLR
		346	348

SIP MESSAGES FOR CALLING NAME DRECENTA

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